UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2002/01195

January 26, 2004

Mr. Lawrence C. Evans
U.S. Army Corps of Engineers
Attention: Karla Ellis
Regulatory Branch, CENWP-CO-GP
PO Box 2946
Portland, OR 97208-2946

Re: Endangered Species Act Formal Section 7 and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation Request for the Upper Bennett Dam Ladder Replacement Project, North Santiam River, City of Salem, Marion County, Oregon (Corps No. 200200800).

Dear Mr. Evans:

Enclosed is a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to Section 7 of the Endangered Species Act (ESA) on the effects of issuing a permit under Section 404 of the Clean Water Act to authorize the Upper Bennett Dam Ladder Replacement Project, on the North Santiam River in Marion County, Oregon.

In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Upper Willamette River (UWR) chinook salmon (*Oncorhynchus tshawytscha*) and UWR steelhead (*O. mykiss*). As required by Section 7 of the ESA, NOAA Fisheries included reasonable and prudent measures with nondiscretionary terms and conditions that NOAA Fisheries believes are necessary to minimize the impact of incidental take associated with this action.

This document also serves as consultation on essential fish habitat pursuant to Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR Part 600.

If you have any questions regarding this consultation, please contact Anne Mullan of my staff in the Oregon State Habitat Office at 503.231.6267.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: Sandra Olds, City of Salem
Steve Mamoyac, ODFW

Endangered Species Act - Section 7 Consultation
Biological Opinion

&

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Upper Bennett Dam Ladder Replacement Project,
North Santiam River
City of Salem, Marion County, Oregon
(Corps No. 200200800)

Agency:	U.S. Army Corps of Engineers
Consultation Conducted By:	National Marine Fisheries Service, Northwest Region
Date Issued:	January 26, 2004
Issued by:	for Michael R Crouse D. Robert Lohn Regional Administrator
Refer to:	**2002/01195**

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1. INTRODUCTION

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1544), as amended, establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with NOAA's National Marine Fisheries Service (NOAA Fisheries), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitats. This biological opinion (Opinion) is the product of an interagency consultation pursuant to Section 7(a)(2) of the ESA and implementing regulations found at 50 CFR 402.

The analysis also fulfills the essential fish habitat (EFH) requirements under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (§305(b)(2)).

1.1 Consultation History

On November 13, 2002, National Marine Fisheries Service (NOAA Fisheries) received a faxed copy of a September 30, 2002, letter requesting Endangered Species Act (ESA) Section 7 consultation from the U.S. Army Corps of Engineers (COE) for the replacement of the Upper Bennett Dam Ladder, on the North Santiam River, in Marion County, Oregon. In their letter, the COE determined that Upper Willamette River (UWR) chinook salmon (*Oncorhynchus tshawytscha*) and UWR steelhead (*O. mykiss*) are "likely to be adversely affected" (LAA) by the ladder replacement.

Further information on the 95% design documents was requested in January, 2003. The bid specifications and contract documents were received on March 3, 2003. Further information with changes to the action and construction staging areas was requested in June, 2003, and received in October, 2003. The biological assessment (BA) provided by the COE with the request for consultation said the proposed activities are likely to adversely affect anadromous fish species listed under the ESA. The objective of this biological opinion (Opinion) is to determine whether the proposed action is likely to jeopardize the continued existence of Upper Willamette River (UWR) chinook salmon or UWR steelhead.

The Willamette River supports UWR chinook salmon (*Oncorhynchus tshawytscha*) and UWR steelhead (*O. mykiss*). UWR chinook salmon were listed as threatened under the ESA by NOAA Fisheries on March 24, 1999 (64 FR 14308). UWR steelhead were listed as threatened under the ESA by NOAA Fisheries on March 25, 1999 (64 FR 14517). Protective regulations for both species were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). NOAA Fisheries designated critical habitat for both species on February 16, 2000 (65 FR 7764), and

withdrew both designations by consent decree on April 30, 2002. Additional references and biological information are available in Busby *et al.* 1996, Myers *et al.*1998 and Healey 1991.

This Opinion is based on the information presented in the BA and supplementary documents (Craven 2002), and a site visit, and considers the potential effects of the proposed action on UWR chinook and UWR steelhead.

1.2 Proposed Actions

1.2.1 Project Purpose and Background

The City of Salem (City) and Santiam Water Control District (SWCD) jointly own Upper Bennett Dam on the North Santiam at the upstream end of Geren/Stayton Island. Upper Bennett Dam diverts flow into the north channel. Flashboards are installed along the crest of the dam in early summer to maintain the diversion as river flows decline. The City's municipal water facilities are on Geren Island and the intake extends into the north channel. Downstream, Lower Bennett Dam diverts north channel flows returning to the mainstem North Santiam River into SWCD's hydropower and irrigation canal and into Salem Ditch, owned by the City of Salem, and supplies water to the upper reaches of Mill Creek through the City of Salem to the Willamette River. As with Upper Bennett Dam, flashboards are sometimes installed along the crest of the dam to maintain the diversion as river flows decline. The Lower Bennett Dam ladder is scheduled for replacement in 2005. The total flows in the north channel are in the range of 400 to 600 cubic feet per second (cfs) during the low flow periods when the flashboards are in place. Flows in the south channel, which provides passage for most adult migrants, can range from less than 200 cfs to 2000 cfs during the peak diversion periods.

The existing ladder at Upper Bennett Dam was evaluated in 2001, and was found to require improvements for fish passage and attraction away from the dam's concrete apron. Additionally, fish trapping facilities at the ladder crowd and injure fish and are also proposed to be improved.

1.2.2 Ladder Replacement

Upper Bennett Dam has a pool and weir fish ladder that was constructed in 1966. Flow in the ladder is regulated by manually adjusting the crest elevation of the timber weirs. This ladder will be replaced with a reinforced concrete vertical slot ladder in the same location beside the south bank. This design can provide passage over a wider range of flows and requires minimal adjustment to control flows. Seven 8-foot by 10-foot pools will be used to achieve the appropriate head drop normally encountered at Upper Bennett Dam. The slot width will be 1.25 feet to accommodate larger salmon and steelhead. The new fishway will extend about 50 feet downstream from the existing ladder's entrance. The new ladder will include both high flow and low flow entrance gates to allow migrating fish to locate the ladder entrance under a wider range of river flows. Only one entrance gate will be operated at a time. The high flow entrance will be oriented directly downstream along the south shoreline. The low flow entrance will be oriented downstream and slightly toward the center of the river. When operating, each gate will be

submerged and will develop approximately 1.5 feet of head loss. The ladder structure will include a flume regulated by a weir gate to provide supplemental flows ranging from 55 to 65 cfs to attract fish to the ladder. Monthly average flows through the ladder are estimated to increase from an existing range of 29 to 54 cfs, to 92 to 94 cfs (Craven 2002, Appendix C).

Staff gauges will be installed at strategic locations for the operation of the ladder and trap, including: (1) Outside the fish ladder both upstream and downstream of the dam; (2) inside the ladder in the entrance pool, exit pool, and the first pool downstream of the exit pool; (3) within the trap upstream of the finger weir; and (4) inside the auxiliary water supply system upstream of the diffuser rack. The gauges will be marked at foot and 1/10 foot intervals, and will be visible from the grating above.

A trash rack will be constructed to block large debris at the exit from the ladder. The rack will have vertical bars with 10-inch spacing and will include a 20-inch by 36-inch opening in the lower portion to allow fish passage. The trash rack will be regularly inspected for debris, and manually cleaned by the City or SWCD.

1.2.3 Fish Counting Facilities

The Oregon Department of Fish and Wildlife (ODFW) traps fish for identification, examination, and counting using a screen inserted into the ladder to block access to the next pool. The new fish ladder will have a aluminum stop log gate to block the exit pool and attract fish into the new trapping area. After ODFW studies the fish, they will open the upstream slide gate to return fish to the river, remove the stop logs, close the weir gate at the trapping entrance, and allow the ladder to return to normal operations.

1.2.4 Construction Sequence and Temporary Passage

The City will complete construction during the in-water work window of July 15 through August 31 (ODFW 2000), with the exception of clearing the staging area, and the placement of the temporary fish passage facility. The following steps will occur in this order:

1. Staging areas will be cleared along the gravel/dirt road that runs from the south side of the river to the banks above the dam, 17 trees will be removed from the banks and 17 trees will be removed from the staging areas and along the road (Table 1).

2. In mid-June, a temporary, fabricated steel Denil ladder will be placed 25 feet north of the existing ladder. The temporary ladder will be observed and adjusted as necessary to ensure successful fish passage before dewatering the area around the existing ladder.

3. Sheet metal piling or other containment structures will be used to isolate the construction area. Earthen dams will not be used. The coffer dam will extend upstream and downstream of the dam from ordinary high water to the dam surface, with jersey barrier or ecology blocks and sand bags at the dam and apron.

4. The isolated area will be dewatered before excavation and fill operations. An upland settling pond will be used if necessary for discharge of dewatering flows.

5. Salvage operations will remove any fish present during the dewatering. Any fish present will be handled under the supervision of an ODFW fish biologist. Fish caught will be counted and identified to species, then adults will be released upstream and juveniles will be released downstream of the work site.

6. The portions of the existing fish ladder not incorporated into the new structure will be demolished and disposed of. Any cracks in the portion to remain will be repaired.

7. The new ladder and trapping area will be completed to specifications provided by Black & Veatch engineering drawings, then the coffer dam will be removed.

8. The new ladder will be hydraulically tested before removal of the temporary ladder.

9. The staging areas will be restored and trees planted at ratios shown in Table 1 to replace the 33 trees removed to construct the new ladder.

Table 1. Construction and Staging Area Tree Removal. One gallon stock starts are proposed for replacement of all except the cottonwood, for which cuttings are proposed. Replacement ratios are 1:1 for trees less than 6 inch diameter at breast height (dbh), 2:1 for trees between 7 and 13 inches dbh, and 3:1 for tree 14 inches or greater dbh.

Species	Size classes	Number to be removed	Number of replacements
Douglas-fir	**< 6 in.**	**1**	**1**
	7 in. - 13 in.	**3**	**6**
	14 in. - 24 in.	**5**	**15**
Big Leaf Maple	**< 6 in.**	**5**	**5**
	7 in. - 13 in.	**3**	**6**
	14 in. - 26 in.	**4**	**12**
Red Alder	**7 in. - 13 in.**	**7**	**14**
	14 in. - 26 in.	**4**	**12**
Cedar	**14 in**	**1**	**3**
Black Cottonwood	**26 in**	**1**	**3 cuttings**
TOTAL TREES		**34**	**77**

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1. Biological Information

Individuals and populations of the UWR spring chinook and UWR steelhead evolutionarily significant units (ESUs) complete a substantial part of their freshwater life history requirements in the proposed action area. The timing of their life history stages is shown in Table 2. Upstream migration for species in these ESUs is timed to coincide with spring flows over Willamette Falls. All fish migrating to or from upstream tributaries will pass through the action area.

While a portion of spring chinook rear in the tributaries, some spring chinook fry migrate downstream from the tributaries into the mainstem Willamette River during the winter and spring to rear. In addition to being a migration corridor for all anadromous salmonids that spawn in tributaries of the Willamette, juvenile anadromous salmonids rear in the mainstem Willamette River. Kenaston (2003) documented chinook rearing in the mainstem Willamette River from the confluence with the McKenzie River to Newberg, and noted fingerling chinook overwintering in valley floor tributaries of the Willamette that do not contain spawning populations of salmon. Fish habitat distribution maps were recently revised to include updated information showing rearing of both UWR spring chinook and winter steelhead throughout the mainstem from Willamette Falls to confluences with upper tributaries (ODFW 2003a, 2003b).

The North Santiam River joins the Santiam River at river mile 11.5, which then flows into the Willamette River at river mile 108. Many of the land and water uses that are adversely affecting riparian and aquatic habitat in the Willamette River Basin as a whole also adversely affect habitats in the North Santiam River, including forestry, water withdrawals, agriculture, urbanization, and road construction and maintenance.

For the past year, NOAA Fisheries has been working with state, tribal and other Federal biologists to develop the updated information and analyses needed to re-evaluate the status of the Pacific salmon and steelhead ESUs. The NOAA Fisheries Biological Review Team (BRT) for Pacific salmon and steelhead met recently to review this updated information, and reported preliminary findings about the status of each ESU. The results of that review are included in the "Draft Report of Updated Status of Listed ESUs of Salmon and Steelhead."[1]

[1] This draft report is available online at http://www.nwfsc.noaa.gov/trt/brt/brtrpt.cfm.

Table 2. UWR Spring Chinook and Winter Steelhead Salmon Life History Timing, for the North Santiam River at Upper Bennett Dam. Light shading represents low abundance, dark shading represents peak abundance (after USACE *et al.* 2000, and ODFW count data). The peak adult migration period varies annually.

		J	F	M	A	M	J	J	A	S	O	N	D
Upstream Migration	Spr Chinook												
	Wtr Steelhead												
Holding and Spawning	Spr Chinook												
	Wtr Steelhead												
Intragravel Development	Spr Chinook												
	Wtr Steelhead												
Juvenile Rearing	Spr Chinook												
	Wtr Steelhead												
Juvenile Out-migration	Spr Chinook												
	Wtr Steelhead												

As in the past, the BRT used a risk-matrix method to quantify risks in different categories within each ESU. In the draft status update, the method was modified to reflect the four major criteria identified in the NOAA Fisheries' Viable Salmonid Populations (VSP) document: Abundance, growth rate/productivity, spatial structure, and diversity (McElhany 2000). These criteria are a framework for approaching formal ESA recovery planning for salmon and steelhead. Tabulating mean risk scores for each element allowed the BRT to identify the most important concerns for each ESU and make comparisons of relative risk across ESUs and species. These data and other information were considered by the BRT in making their overall risk assessments. Based on provisions in the draft NOAA Fisheries policy on artificial propagation in salmon listing determinations, the risk analyses presented to the BRT focused only on the viability of populations sustained by natural production.

The status review updates were undertaken to allow consideration of new data that have accumulated since the last updates and to address issues raised in recent court cases regarding the ESA status of hatchery fish and resident (nonanadromous) populations In some ESUs, adult returns of some populations over the last 1 to 3 years have been significantly higher than have been observed in the recent past. The BRT found these results, which affected their overall conclusions for some ESUs, to be encouraging. This change reflects the larger adult returns over the past several years, which nevertheless remain well below preliminary targets for ESA recovery. Overall, although recent increases in escapement were considered a favorable sign by the BRT, the response was uneven across ESUs and, sometimes, across populations within

ESUs. The UWR steelhead ESU was among the lowest scoring of all west coast steelhead ESUs.

The BRT noted that recent increases have not yet been sustained for a full salmon/steelhead generation and the causes for the increases are not well understood. In many cases, they may be due primarily to unusually favorable conditions in the marine environment rather than alleviation of the factors that led to widespread declines in abundance. Overall, the BRT felt that ESUs and populations would have to maintain themselves for a longer time at levels considered viable before it could be concluded that they are not at significant continuing risk.

These preliminary findings focus solely on the naturally-spawning portion of each ESU, and do not take into account the future effects of ongoing salmon conservation and recovery efforts. For the UWR chinook and UWR steelhead ESUs considered in this Opinion, the majority BRT conclusion was that they were "likely to become endangered in the foreseeable future." A summary of findings for the UWR spring chinook and winter steelhead ESUs is at the end of the following ESU-specific sections.

Upper Willamette River Spring Chinook

UWR spring chinook salmon migrate through, and rear, in the Willamette River in the action area. The UWR chinook salmon ESU includes native spring-run populations above Willamette Falls and in the Clackamas River. In the past, it included sizable numbers of spawning salmon in the Santiam River, the Middle Fork of the Willamette River, and the McKenzie River, as well as smaller numbers in the Molalla River, Calapooia River, and Albiqua Creek.

The total run sizes reported for UWR spring chinook since 1970, have ranged from 30,000 to 130,000, with the 2000 to 2002 runs in the range of 60,000 to 120,000. In 2002, fishery counts at the Willamette Falls fishway showed a rate of 77% for marked fish through June. Hence, approximately 23% of the 2002, estimated run size of 121,700, or approximately 28,000 returning adults, were natural spawners in the Willamette Basin (ODFW 2003c). Marking of hatchery releases with an adipose fin clip reached 100%, beginning with those released in 1998.[2]

Fish in this ESU are distinct from those of adjacent ESUs in life history and marine distribution. The life history of chinook salmon in the UWR ESU includes traits from both ocean- and stream-type development strategies. Coded wire tag recoveries indicate that the fish travel to the marine waters off British Columbia and Alaska. More Willamette River fish are recovered in Alaskan waters than fish from the Lower Columbia River ESU. UWR chinook salmon mature in their fourth or fifth years. Historically, five-year-old fish dominated the spawning migration runs, but recently, most fish have matured at age four. The timing of the spawning migration is limited by Willamette Falls. High flows in the spring allow access to the upper Willamette Basin, whereas low flows in the summer and autumn prevent later-migrating fish from ascending

[2] S. King, ODFW, in email to A. Mullan, NOAA Fisheries, October 28, 2002 (describing marking of hatchery fish released in the Willamette Basin).

the falls. The low flows serve as an isolating mechanism, separating this ESU from others nearby.

Hatchery production in the basin began in the late nineteenth century. Eggs were transported throughout the basin, resulting in current populations that are relatively homogeneous genetically, although still distinct from those of surrounding ESUs. Hatchery production continues in the Willamette River, with an average of 8.4 million smolts and fingerlings released each year into the main river or its tributaries between 1975 and 1994, resulting in 90% of escapement in the basin from hatchery stock.

Harvest on this ESU is high, both in the ocean and in river. The total in river harvest below the falls from 1991 through 1995 averaged 33%, and was much higher before 1991. Ocean harvest was estimated as between 19 to 33% since 1982. ODFW (1998) indicates that total marine and freshwater harvest rates on UWR spring-run stocks were reduced considerably for the 1991 through 1993 brood years, to an average of 21%.

Spring chinook salmon are native to the Santiam River subbasin. Wallis (1963) estimated a minimum run size of 8,250 adults in 1934 based on egg-taking at a hatchery rack near the confluence of the Breitenbush and North Santiam rivers (now under Detroit reservoir). This estimate did not include fish that spawned downstream of the rack, such as in the lower mainstem North Santiam River and the Little North Santiam River. Mattson (1948) estimated that 2,015 fish spawned naturally in the areas that are now above Detroit and Big Cliff dams out of an estimated 2,830 in the North Santiam River subbasin as a whole in 1947. Parkhurst *et al.* (1950) estimated that habitat could accommodate at least 30,000 adults.

Based on a comparison of the proportion of marked hatchery adults at return versus release, ODFW (1995) concluded that less than 300 naturally-produced UWR chinook adults returned to the subbasin in 1994. The total number of redds for marked plus unmarked chinook salmon in the 27-mile reach from Stayton Dam to Minto, increased from 155 in 1998 to 323 in 2000, dropping slightly to 308 in 2001, and dropping to 276 in 2002 (Lindsay *et al.* 1998, 2000; Schroeder *et al.* 1999, 2001, 2002). Of 349 carcasses counted in 2002, between Upper Bennett Dam and the Minto facility, 73 (21%) were classified as unclipped or naturally-produced spawners. In the 14 miles downstream from Stayton and above Greens Bridge, six redds were surveyed in 2002, and in this stretch, 25 carcasses were counted (Schroeder *et al.* 2002).

In some years, hundreds of UWR chinook salmon have been observed in the Little North Santiam River (801 in 1946, 273 in 1954, 236 in 1971, and 242 in 1991; Willis *et al.* 1995, BLMS 1998, USACE 2000), but counts dropped below 16 per year during 1992 through 1995 (Willis *et al.* 1995). The total number of redds in the Little North Santiam varied from 11 to 39 during 1998 through 2001 (Lindsay *et al.* 1998, 2000; Schroeder *et al.* 1999, 2001).

Because hatchery fish were not consistently marked before 1998, it was not possible to detect trends in the wild (naturally-produced) population. For wild spring chinook salmon still present in the North Santiam subbasin, implementation of an expanded, basin-wide hatchery marking

program and an increasingly selective fishery are expected to result in an incremental increase in survival of 37%. ODFW has begun to determine the extent of remnant wild spring chinook salmon population in the North Santiam subbasin, through the collection of otoliths and scale samples from adults caught in the sport fishery, on the spawning grounds, and at the Minto facility (ODFW 1998). Beginning in 2001, ODFW also monitored the ratios of marked to unmarked adult spring chinook salmon at Stayton, in the fishery, on the spawning grounds, and at the Minto facility.

While examination of the status of wild spring chinook continues, all hatchery spring chinook released in the North Santiam River are marked smolts. ODFW plans to maintain the practice of not stocking the Little North Santiam River, but the Willamette Basin Fish Management Plan (ODFW 1998) requires that, if wild spring chinook escapement (which has declined in recent years) does not improve, a "rehabilitation" program (stocking with marked hatchery smolts) be considered for one cycle.

In 2003, the BRT reviewed data of historical spring chinook populations including: Clackamas, Mollala, North Santiam, South Santiam, Calapooia, McKenzie, and Middle Fork Willamette Rivers. While lacking an assessment of the ratio of hatchery-origin to wild-origin chinook passing the falls, hatchery-origin fish were described as dominating the runs. Hatchery spring chinook are released in the Upper Willamette River as mitigation for the loss of habitat above Federal hydroprojects. While harvest retention is only allowed for hatchery marked fish, take of natural spawners from hooking mortality and non-compliance also occurs. Overall, the hatchery production is considered a potential risk because it masks the productivity of the natural population, interbreeding between hatchery and natural fish poses potential genetic risks, and incidental take from the fishery promoted by the hatchery production can increase adult mortality.

The BRT reviewed data specific to the North Santiam and found natural-origin spawners were greatly outnumbered by hatchery origin spawners, resulting in estimated 94% hatchery origin spawners in 2000, and 98% in 2001. This led the BRT to consider the population as not self-sustaining, although it was recognized as one of seven historical spring chinook populations. The basis for a large number of spring chinook released in the Upper Willamette is as mitigation for the loss of habitat above Federal hydroprojects. While harvest retention is only allowed for hatchery marked fish, take of natural spawners from hooking mortality and non-compliance also occurs. Overall, the hatchery production is considered a potential risk, because it masks the productivity of natural population, interbreeding between hatchery and natural fish poses potential genetic risks and the incidental take from the fishery promoted by the hatchery production can increase adult mortality.

For the UWR chinook salmon ESU as a whole, NOAA Fisheries estimated that the median population growth rate (lambda) over the base period ranges from 1.01 to 0.63, decreasing as the effectiveness of hatchery fish spawning in the wild increases compared to that of fish of wild origin (Tables B-2a and B-2b in McClure *et al.* 2000).

Upper Willamette River Steelhead

The UWR steelhead ESU occupies the Willamette River and tributaries upstream of Willamette Falls, extending to and including the Calapooia River. These major river basins containing spawning and rearing habitat comprise more than 12,000 square kilometers in Oregon. Rivers that contain naturally-spawning, winter-run steelhead include the Tualatin, Molalla, Santiam, Calapooia, Yamhill, Rickreall, Luckiamute, and Mary's Rivers. Early migrating winter and summer steelhead have been introduced into the upper Willamette basin, but those components are not part of the ESU. Willamette Falls, at river mile 26, is a known migration barrier and while winter steelhead and spring chinook salmon historically occurred above the falls, summer steelhead, fall chinook, and coho salmon did not. Native winter steelhead within this ESU have been declining since 1971, and have exhibited large fluctuations in abundance. Habitat in this ESU has become substantially simplified since the 1800's by removal of large woody debris to increase the river's navigability, by reduction in riparian vegetation, and by channel modifications.

In general, native steelhead of the upper Willamette basin are primarily late-migrating winter steelhead, entering freshwater primarily in March and April. This atypical run timing appears to be an adaptation for ascending Willamette Falls, which functions as an isolating mechanism for UWR steelhead. Reproductive isolation resulting from the falls may explain the genetic distinction between steelhead from the upper Willamette basin and those in the lower river. UWR late-migrating steelhead are ocean-maturing fish. Most return at age four, with a small proportion returning as five-year-olds (Busby *et al.* 1996).

Spawning takes place from April through the first of June, indicating little change from historical conditions. Because spawning takes place primarily in May, it is separated in time from that of UWR chinook salmon which takes place primarily in September. Some spatial separation occurs as well because UWR steelhead typically spawn in smaller streams than UWR chinook salmon. Thompson *et al.* (1966) estimated that the North Santiam subbasin supported a population of 3,500 UWR steelhead in the 1950s and 1960s, including adults trapped at Minto Dam. A winter-run hatchery stock, developed primarily from North Santiam wild fish but with some fish from the Big Creek and Klaskanine River stocks, was released into the Santiam subbasin beginning in 1952. The main hatchery production of native (late-run) winter steelhead occurred in the North Fork Santiam River, where estimates of hatchery proportions in natural spawning areas ranged from 14% to 54% (Busby *et al.* 1996). ODFW (1990) released approximately 100,000 steelhead smolts each year, mostly into the mainstem North Santiam River and Big Cliff Reservoir. Traps installed at Stayton in the North Santiam River in 1993, and 1994, caught 42% and 85%, respectively, marked winter steelhead (Kostow 1995). Hatchery strays from outside the system represented 2% of the catch in both years; the remainder were North Santiam stock hatchery fish. Beginning with releases in 1990, 100% were marked. Estimates of the percentage of naturally-spawning fish attributable to hatcheries in the late 1990s were 17% in the North Santiam

(Chilcote 1997). Steelhead smolt releases stopped after 1998, with the three-year-old spawners returning in 2001.[3]

The West Coast steelhead BRT met in January 2003 to determine if new information or data warranted any modification of the conclusions of the original BRTs. They focused primarily on information for anadromous populations in the risk assessments for steelhead ESUs, but considered the presence of relatively numerous, native resident fish as a mitigating risk factor for some ESUs. Their draft report summarizes new information and the preliminary BRT conclusions on the UWR winter steelhead ESU and nine other ESUs.[4]

They noted that after a decade in which Willamette Falls counts were near the lowest levels on record, adult returns for 2001, and 2002, were up significantly. Yet the total abundance is small for the entire ESU with a recent mean of less than 6,000, and a number of populations that are each at relatively low abundance. Most of the populations are in decline over the period of the available time series. Given that the BRT could not conclusively identify a single naturally self-sustaining population, it is uncertain whether recent increases can be sustained. The discontinuation of the releases of the "early" winter-run hatchery population was described as positive, but continued releases of non-native summer steelhead are a cause for concern. Available time series are confounded by the presence of hatchery-origin spawners.

For the UWR steelhead ESU as a whole, NOAA Fisheries estimated that the median population growth rate (lambda) over the base period ranges from 0.94 to 0.87, decreasing as the effectiveness of hatchery fish spawning in the wild increases compared to that of fish of wild origin (Tables B-2a and B-2b in McClure *et al.* 2000).

2.1.2 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species. In conducting analyses of habitat-altering actions under Section 7 of the ESA, NOAA Fisheries uses the following steps: (1) Consider the status and biological requirements of the species; (2) evaluate the relevance of the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species; (4) consider cumulative effects; and (5) determine whether the proposed action, in light of the above factors, is likely to appreciably reduce the likelihood of species survival in the wild. In completing this step of the analysis, NOAA Fisheries determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the continued existence of the listed species. If

[3] P W. Hunt, ODFW, email to A. Mullan, NOAA Fisheries (October 28, 2002) (describing end of steelhead smolt release in Santiam subbasin).

[4] This draft report is available online at http://www.nwfsc.noaa.gov/trt/brt/brtrpt.cfm.

NOAA Fisheries finds that the action is likely to jeopardize the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

The environmental baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. Direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions, contributing to habitat degradation.

For this consultation, the action area is defined by NOAA Fisheries regulations (50 CFR 402) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." Because the dam directs flows away from the channel below proposed replacement ladder will be placed, the action area extends beyond the immediate proposed structures. The action area begins at the upstream end of Upper Bennett Dam and extends to the confluence of both channels downstream to the extent that dam diversions affect river flow levels.

2.1.2.1 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA Section 7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species, taking into account population size, trends, distribution and genetic diversity.

The relevant biological requirements are those necessary for the subject species to survive and recover to a naturally-reproducing population level, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance its capacity to adapt to various environmental conditions, and allow it to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful rearing and migration. The current status of the indicated fish species, based upon their risk of extinction, has not significantly improved since the species were listed.

Essential elements for salmonids are: Substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food (juvenile only), riparian vegetation, space, and safe passage conditions. Based on migratory and other life history timing, it is likely that both adult and juvenile life stages are present in the action area when activities would be carried out. Actions authorized by the proposed project may affect water velocity, riparian vegetation, and safe passage.

According to the watershed assessment for the North Santiam, the subbasin has produced approximately 60% of wild steelhead in the upper Willamette Basin (E&S Environmental Chemistry 2002). The North Santiam was also described as providing habitat to approximately 40 to 50% of the winter steelhead, and 20 to 25% of the spring chinook in the Willamette system.[5] Spawning and rearing occur in the river reaches downstream, although most spawning takes place upstream of the action area.

In their 2000 Salmon Basinwide Recovery Strategy, the Federal Caucus (2000) identified the North Santiam as one of three priority subbasins in which to focus immediate attention for UWR chinook and UWR steelhead, because productive capacity could be significantly increased if problems related to water diversion were addressed. Actions suggested included protecting productive habitat and fixing flow, passage and diversion problems by restoring flows to depleted streams, screening and combining water diversions, and reducing passage obstructions.

2.1.2.2 Environmental Baseline

Human activities have had vast adverse effects on the salmonid populations in the Willamette River drainage. First, the Willamette River, once a highly braided river system, has been dramatically simplified through channelization, dredging, and other activities that have reduced rearing habitat by as much as 75%. In addition, the construction of 37 dams in the basin has blocked access to over 700 kilometers of stream and river spawning habitat. The dams also alter the temperature regime of the Willamette and its tributaries, affecting the timing and development of naturally-spawned eggs and fry. Water quality is also affected by development and other economic activities. Agricultural and urban land uses on the valley floor, as well as timber harvesting in the Cascade and Coast ranges, contribute to increased erosion and sediment load in Willamette River Basin streams and rivers. Finally, since at least the 1920s, the lower Willamette River has suffered municipal and industrial pollution.

The COE's Big Cliff and Detroit dams upstream on the North Santiam block passage to 38 miles of habitat and passage to tributaries. Downstream from the Big Cliff Dam, the North Santiam has 47 miles of potential fish habitat. The Minto fish weir, two miles below Big Cliff Dam, also restricts upstream passage. At the Minto facility, ODFW sorts marked hatchery fish from wild fish, and returns some of the hatchery fish to sites downstream for the recreational fisheries. Unmarked fish are returned to the river, either immediately above the weir, or in some cases into the Little North Santiam, the largest tributary below the COE dams. Chinook fry are released into Detroit Reservoir where they contribute to the sport fishery. It is unknown whether this population contributes to runs below the dams.

Before construction of Detroit and Big Cliff Dams, peak flows in the North Santiam greater than 40,000 cfs were not uncommon. Since completion of the existing COE flood control projects in 1953, unregulated inflows from tributaries such as the Little North Santiam River continue to

[5] L. Trosi, SWCD, transcript of comments to Screening Fund Committee, provided for SWCD Biological Opinion issued March 3, 2003.

produce flood events comparable to all but the largest pre-dam flows. Flows as high as 67,200 cfs have been recorded at the Mehama gage upstream from the Upper Bennett Dam, but the two-year recurrence interval event has decreased from approximately 34,200 cfs to 19,700 cfs. Since completion of Detroit and Big Cliff Dams, USGS Mehama gage flows lower than 682 cfs have not been recorded, and the average daily flow in August has increased to 1,230 cfs (USGS 2003). Some post-project summer flows are greater than occurred historically because storage is available at COE facilities to redistribute flood volumes and release water later in the year for flow augmentation purposes.

At Upper Bennett Dam, flashboards divert part of the river into the north channel and the remaining flows travel over the dam and ladder into the south channel. The Upper Bennett Dam operations provide flows into the north channel for the City of Salem municipal intakes, the Salem Ditch diversion, and flows over Lower Bennett Dam. Lower Bennett Dam diverts part of the north channel flows into the SWCD canal and Salem Ditch. Flows over the dam and ladder remain in the north channel and join the south channel a short distance downstream. Flows in the unscreened Salem Ditch are diverted to the City of Salem, through Mill Creek, and finally to the Willamette River.

The majority (90%) of adults migrating upstream via the south channel ascend the Upper Bennett Dam ladder from the south channel, although they can also earlier ascend either the Spill Dam ladder or the Lower Bennett Dam ladder and enter the north channel. At low flows, Lower Bennett Dam has an exposed concrete apron that can harm fish attempting to jump over it. The ladder is proposed for replacement by the City of Salem in 2005.

Under existing operations, the total diversions routed into the north channel could strand fish in the south channel in low flow years. Diversions are generally at their maximum in August when average monthly values for daily flows in the south channel, after diversions to the north channel, are in the range of less than 200 to 1200 cfs. An ODFW (1994) evaluation of passage at the Stayton complex used the Oregon Method to evaluate conditions in both the north and south channels. The study objective was to determine a relationship between river discharge and suitable depths and velocities to achieve adult passage conditions. The authors analyzed data from three transects to correlate discharge with percent-passable conditions, assuming a minimum depth of 0.8 feet, and maximum velocity criteria of 8 feet per second for adult chinook. For the south channel to meet these criteria in 25% of the stream width, the mean discharge required is 470 cfs. To meet the criteria in 10% of the stream width, the mean discharge required is 375 cfs. The south channel is nearly dewatered in low flow years (E&S Environmental Chemistry 2002), particularly when flows into the north channel exceed the maximum required to meet diversions.

Monthly average flows measured at the Mehama USGS gage 17 miles upstream, less diversions at Upper Bennett Dam to the north channel estimated as 563 cfs (NOAA Fisheries 2003), show that for several years flows in the south channel are less than needed to meet criteria for 25% of stream width, and in extreme low flow years such as 1992, not even 10% of stream width will meet passage criteria (Table 3). Under these circumstances, the loss of passage is especially

problematic when low flows coincide with the peak return weeks, which occur at some point during the months of March to May for winter steelhead, and April to October for spring chinook. During June through August 1999 to 2001 peak returns, daily counts of 500 to 1100 spring chinook were recorded at Upper Bennett Dam (Craven 2002). If more flows are diverted under low water year conditions, the potential for take under section 9(a)(1) of the ESA increases dramatically due to insufficient passage and possible temperature exceedances.

Table 3. Percent of monthly average flows which did not meet passage criteria of 25% wetted stream width in the primary channel of the North Santiam River below Upper Bennett Dam from 1954 to 2002, and lowest monthly average flows.

Months when dam diverts flow:	**June**	**July**	**August**	**September**
% years with flows < criteria discharge for 25% stream width	4%	6%	22%	4%
lowest monthly average flow at gage upstream of diversion	956 cfs in 1992	757 cfs in 1992	699 cfs in 1992	916 cfs in 2001

The North Santiam River is 303d-listed for temperature in both time periods checked by Oregon Department of Environmental Quality (ODEQ 2002). Their data show that 39% of summer values exceeded the temperature standard (17.8°C), with exceedences annually and a maximum of 22°C in water years 1986 to 1995. For the spawning season criteria of 12.8°C, 12 days in the period of September 1999 through June 2000 had temperatures exceeding the criteria (ODEQ 2002). In draft guidance for temperature water quality standards, the EPA listed adult migration lethal temperatures as 21 to 22°C for one week constant exposure, with elevated disease at constant temperatures 14 to 17°C, and an overall reduction in migration fitness due to cumulative stresses found at temperatures greater than 17 to 18°C for prolonged exposures (EPA 2002). Spawning and egg incubation temperatures were much lower with constant 4 to 12°C necessary for good survival.

2.1.3 Analysis of Effects

2.1.3.1 Effects of the Proposed Actions

Fish Passage

Fish passage will be improved. This project is designed to eliminate the current ladder as a barrier by ensuring that its replacement will provide attraction flows to move fish away from the dam face and resting areas for adults during passage through the ladder. These improvements will increase survival of adult UWR chinook salmon and UWR steelhead migrating to the spawning areas upstream.

Construction Effects

As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. Operation of the back-hoes, excavators, and other equipment requires the use of fuel and lubricant which, if spilled into the channel of a waterbody or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants, such as fuel, oil, and some hydraulic fluids, contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985).

Construction-related effects necessary to complete the proposed action will be minimized by completing the in-water work during low flow periods and by isolating the instream work area. Construction equipment will work from the banks and no construction equipment will enter flowing water as a result of this proposed action.

Much of the flow across the face of the dam, ranging from 400 to 2000 cfs[6] during the low flow months of July through September, is expected to pass through the temporary ladder during construction. This may change the streambed structure downstream and modify the depth or location of in-river holding pools.

The construction will primarily take place during the in-water work window, with the exception of placing the temporary ladder before dewatering and removing coffer dams after completion of construction. The coffer dam removal may result in some increases in turbidity during the final migration months for adults but would also overlap with migrating adults if removed earlier. Turbidity will not exceed the standard of 10% above ambient conditions. Restoration of the staging area post-construction will minimize any short-term riparian impacts.

Fish Rescue, Salvage and Relocation

Salvage activities in the coffer dam around the ladder and screen construction areas will require handling of listed salmonids during fish removal. Seining and fish release will be done under the supervision of a fishery biologist experienced in handling ESA-listed fish. Preferably, ODFW biologists will supervise, as they are counting fish at the existing ladder until dewatering begins.

Based on a discussion with the local ODFW biologist regarding the presence of salmonids in the project area, we determined that the potential exists to capture and relocate 100 adult chinook salmon, but few or no adult steelhead, and up to 100 juvenile steelhead and chinook during work area isolation and fish rescue and salvage efforts.[7] Up to a 5% direct or delayed mortality rate from capture and relocation stress could occur during fish salvage and removal resulting in lethal take of up to 10 steelhead or chinook salmon.

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[6] Mehama gage values monthly means range from 750 to 2700 cfs, less diversions to the north channel.

[7] W. Hunt, ODFW, telephone conversation with A. Mullan, NOAA Fisheries, December 17, 2003 (discussing fish salvage for Upper Bennett Dam ladder replacement).

Net Effect

For the proposed action, NOAA Fisheries expects that the effects of the proposed project will tend to maintain or move towards restoration of each of the habitat elements over the long term. However, in the short term, a temporary increase in sedimentation and turbidity, and disturbance of riparian and instream habitat are expected. Fish will be temporarily displaced, and possibly injured or killed during work isolation and fish salvage. The net effect from the proposed action, is the maintenance and restoration of functional passage. No improvement in the North Santiam migration, rearing, or spawning below the dam will result without improvements in flow management.

2.1.3.2 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." Other activities within the watershed have the potential to impact fish and habitat within the action area. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate Section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed action.

Baker et al. (2002) projected three scenarios for trajectories of change in the Willamette River Basin from 1990 to 2050. The scenarios are called (1) Conservation 2050, corresponding to increased ecosystem protection and restoration, (2) Plan Trend 2050 which continues recent trends with implementation of existing land use plans, and (3) Development 2050 for relaxation of current land use policies. For the first two, urbanized growth areas increase by approximately 20%, while for the Development 2050 trajectory, the increase is over 50%. The water consumption patterns are similar, with 20 to 30% increases for the first two, but near 50% in the third case. For rural development, the Conservation 2050 trajectory shows less than 5% change, while the Plan Trend 2050 trajectory is projected at about 10% and the Development 2050 trajectory at close to a 70% increase.

Potential beneficial actions affecting passage through the North Santiam River include evaluation of and reduction in diversions, particularly during annual and drought low flow periods, by the City of Salem and other current water right holders. The City of Salem forecasts an increase in peak demand of 30% over the next 50 years,[8] and may ask to expand their capacity to divert flows from the North Santiam River accordingly. Similarly, other water users relying on the Upper Bennett Dam to divert flows may also ask to expand their usage, thus adding to flow concerns.

Water from the N. Santiam River provides for the Salem urban area primarily in Marion County but including West Salem in Polk County. The percent change for Marion County population from 1990 to 2000 was 24.7%, and percent change for Polk County was 25.9% (US Census

[8] City of Salem, Water System Overview Fact Sheet provided to A. Mullan at a meeting October 15, 2003.

Bureau 2003). Within the Salem urban area, residential commercial and industrial development are permitted within the County service districts or within the City of Salem where public sewer and water services are available and other urban facilities are scheduled pursuant to an adopted growth management program (City of Salem 2000). The projected change for populations in Marion and Polk counties between 2000 and 2040 was 64% and 53% respectively, and non-federal activities within the action area are expected to increase with increasing human populations (ODAS 2003).[9] Thus, NOAA Fisheries assumes that future private and State actions will continue within the action area, but at increasingly higher levels as the human population increases.

2.1.4 Conclusion

The final step in NOAA Fisheries' approach to the jeopardy analysis is to determine whether the proposed action is likely to appreciably reduce the likelihood of species survival or recovery in the wild. NOAA Fisheries has determined that, when the effects of the proposed Upper Bennett Dam Ladder Replacement Project addressed in this Opinion are added to the environmental baseline and cumulative effects occurring in the action area, it is not likely to jeopardize the continued existence of UWR steelhead and chinook salmon. NOAA Fisheries used the best available scientific and commercial data to apply its jeopardy analysis when analyzing the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects.

These conclusions are based on the following considerations: (1) The timing of the work within the in-water work window will minimize the construction impacts; (2) isolation of the in-water work area and interim passage via the temporary ladder will avoid passage effects; (3) turbidity from excavation and transport will be controlled by measures to maintain levels within 10% above natural background stream turbidity; (4) restoration activities will be completed to compensate for some loss of riparian habitat due to staging area effects; (5) the new ladder's effectiveness and the water use will be monitored and reported, and (6) the proposed ladder replacement will allow long-term progress of impaired habitat toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale.

2.1.5 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. NOAA Fisheries believes the following conservation recommendations are consistent with these obligations, and therefore should be carried out by the COE:

[9] Marion County population in 2000 was 284,834 and Polk County population was 63,280.

1. Produce a water management plan which addresses flows required for passage, rearing, and spawning for the Upper and Lower Bennett dams and SWCD diversion system, including participating in an IFIM study for reaches affected by the dams.

2. Include a plan of operation for the Big Cliff and Detroit dams to provide sufficient flows under low flow conditions during spring chinook migration, so that the south channel will have a minimum 25% width available for passage, determined to require flows of 470 cfs in the ODFW passage evaluation report (ODFW 1994), or those flows determined in future studies.

3. Modify the unscreened diversions on the Salem Ditch and at the downstream outlets of the SWCD irrigation canal into Mill Creek, Marion Creek and/or McKinney Creek with screens meeting NOAA Fisheries' criteria[10] by the applicant to prevent take.

For NOAA Fisheries to be kept informed of actions minimizing or avoiding adverse effects, or those that benefit listed salmon and steelhead or their habitats, we request notification of the achievement of any conservation recommendations when the COE submits its annual report describing achievements of the fish monitoring program during the previous year.

2.1.6 Reinitiation of Consultation

This concludes formal consultation on these actions in accordance with 50 CFR 402.14(b)(1). Reinitiation of consultation is required: (1) If the amount or extent of incidental take is exceeded; (2) if the action is modified in a way that causes an effect on the listed species that was not previously considered in the biological assessment and this biological opinion; (3) if new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

If the applicant fails to pro vide specified monitoring information by the required dates, NOAA Fisheries will consider that a modification of the action that causes an effect on listed species not previously considered, and causes the Incidental Take Statement of this Opinion to expire.

2.2 Incidental Take Statement

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203]. Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." [16 USC 1532(19)] Harm is defined by

[10] National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (http://www.nwr.noaa.gov/1hydrop/hydroweb/ferc.htm).

regulation as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering." [50 CFR 222.102] Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering." [50 CFR 17.3] Incidental take is defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant." [50 CFR 402.02] The ESA at Section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a Section 7(b)(4) incidental take statement [16 USC 1536].

2.2.1 Amount and Extent of the Take

NOAA Fisheries anticipates that activities associated with gravel extraction called for by this proposed action are reasonably certain to result in incidental take of ESA-listed salmonids because of potential adverse effects from temporary ladder operations, increases in turbidity and erosion, losses of riparian vegetation, and salvage.

UWR steelhead and spring chinook salmon may be adversely affected during the ladder construction. The new ladder will reduce effects from inadequate passage, and temporary effects of construction will be minimized by BMPs and successful replacement of vegetation. Therefore, even though NOAA Fisheries expects some level of incidental take to occur due to the action covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NOAA Fisheries to estimate a specific amount of incidental take to the species itself. In instances such as this, NOAA Fisheries designates the expected level of take as unquantifiable, except for the estimate of salvage mortalities, estimated as 10 steelhead and chinook. In the accompanying Opinion, NOAA Fisheries determined that this level of anticipated take is not likely to result in jeopardy to the species. The extent of the take is limited to UWR steelhead and chinook salmon in the Willamette River and to the associated riparian and aquatic habitats in the action area as defined in section 2.1.2 of this Opinion.

2.2.2 Reasonable and Prudent Measures

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to avoid or minimize take of listed salmonid species resulting from the action covered by this Opinion. The COE shall include measures that will:

1. Avoid or minimize the likelihood of incidental take associated with general construction of the fish ladder by ensuring fish passage around the project during construction and avoiding or minimizing disturbance to riparian and aquatic systems.

2. Avoid or minimize the likelihood of incidental take associated with fish ladder operations by ensuring that the facilities allow upstream and downstream movement of adult and juvenile fish past Upper Bennett Dam.

3. Ensure completion of a comprehensive monitoring and reporting program to confirm this Opinion is meeting its objective of minimizing take from permitted activities.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the COE and/or their contractors must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (general construction of the fish ladder), the COE shall ensure that:

    a. Timing of in-water work. Work below ordinary high water will be completed during the preferred in-water work period of July 15 to August 31, except for the following. Any other work below ordinary high water outside of the work period must be approved in writing by NOAA Fisheries.
        i. The temporary ladder will be installed at least two weeks before dewatering.
        ii. Coffer dams will be removed promptly after other work is completed.
    b. Cessation of work. Project operations will cease under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.
    c. Fish passage. Passage in the North Santiam River will be provided for any adult or juvenile salmon or steelhead present in the project area during construction, and after construction for the life of the project via the temporary Denil ladder.
    d. Fish screens. All water intakes used for a project, including pumps used to isolate an in-water work area, will have a fish screen installed, operated and maintained according to NOAA Fisheries' fish screen criteria.[11]
    e. Pollution and Erosion Control Plan. A pollution and erosion control plan will be prepared and carried out to prevent pollution related to construction operations. The plan must be available for inspection on request by COE or NOAA Fisheries.
        i. Plan Contents. The pollution and erosion control plan must contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.

[11] National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (http://www.nwr.noaa.gov/1hydrop/hydroweb/ferc.htm).

(1) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.

(2) Practices to confine, remove and dispose of excess concrete, cement and other mortars or bonding agents, including measures for washout facilities.

(3) A description of any hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.

(4) A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

(5) Practices to prevent construction debris from dropping into any stream or waterbody, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

ii. Inspection of erosion controls. During construction, all erosion controls must be inspected daily during the rainy season and weekly during the dry season to ensure they are working adequately.[12]

(1) If inspection shows that the erosion controls are ineffective, work crews must be mobilized immediately to make repairs, install replacements, or install additional controls as necessary.

(2) Sediment must be removed from erosion controls once it has reached 1/3 of the exposed height of the control.

f. Construction discharge water. All discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water) will be treated as follows:

i. Water quality. Facilities must be designed, built and maintained to collect and treat all construction discharge water using the best available technology applicable to site conditions. The treatment must remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities must not exceed 4 feet per second.

iii. Spawning areas. No construction discharge water may be released within 300 feet upstream of active spawning areas.

iv. Temporary stream crossings.

(1) The number of temporary stream crossings must be minimized.

(2) Temporary road crossings must be designed as follows:

[12] "Working adequately" means no turbidity plumes are evident during any part of the year.

(a) A survey must identify and map any potential spawning habitat within 300 feet downstream of a proposed crossing.

(b) No stream crossing may occur at known or suspected spawning areas, or within 300 feet upstream of such areas if spawning areas may be affected.

(c) The crossing design must provide for foreseeable risks (*e.g.*, flooding and associated bedload and debris) to prevent the diversion of streamflow out of the channel and down the road if the crossing fails.

(d) Vehicles and machinery must cross riparian areas and streams at right angles to the main channel wherever possible.

v. Obliteration. When the project is completed, all temporary access roads must be obliterated, the soil must be stabilized, and the site must be revegetated. Temporary roads in wet or flooded areas must be abandoned and restored as necessary by the end of the in-water work period.

g. Heavy Equipment. Use of heavy equipment will be restricted as follows:

i. Choice of equipment. When heavy equipment must be used, the equipment selected must have the least adverse effects on the environment (*e.g.*, minimally-sized, rubber-tired).

ii. Vehicle staging. Vehicles must be fueled, operated, maintained and stored as follows:

(1) Vehicle staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area placed 150 feet or more from any stream, waterbody or wetland.

(2) All vehicles operated within 150 feet of any stream, waterbody or wetland must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected must be repaired in the vehicle staging area before the vehicle resumes operation. Inspections must be documented in a record that is available for review on request by COE or NOAA Fisheries.

(3) All equipment operated instream must be cleaned before beginning operations below the bankfull elevation to remove all external oil, grease, dirt, and mud.

h. Stationary power equipment. Stationary power equipment (*e.g.*, generators, cranes) operated within 150 feet of any stream, waterbody or wetland must be diapered to prevent leaks, unless otherwise approved in writing by NOAA Fisheries.

i. Site preparation. Native materials will be conserved for site restoration.

i. If possible, native materials must be left where they are found.

ii. Materials that are moved, damaged or destroyed must be replaced with a functional equivalent during site restoration.

iii. Any large wood,[13] native vegetation, weed-free topsoil, and native channel material displaced by construction must be stockpiled for use during site restoration.

j. Isolation of in-water work area. Because adult or juvenile fish are reasonably certain to be present, the work area will be well isolated from the active flowing stream using sheet pilings or similar materials. No earthen push-up dams may be used. Before the construction of the coffer dam, the following steps will be taken:
   i. Confirmation that the temporary ladder is functioning, flows have been directed into it, and adult salmon and steelhead are safely passing through.
   ii. Flows to the existing ladder are reduced via flashboard placement immediately before coffer dam construction.

k. Capture and release. Before and intermittently during pumping to isolate an in-water work area, an attempt must be made to capture and release fish from the isolated area using trapping, seining, electrofishing, or other methods as are prudent to minimize risk of injury.
   i. A fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish must conduct or supervise the entire capture and release operation, preferably with ODFW participation.
   ii. If electrofishing equipment is used to capture fish, the capture team must comply with NOAA Fisheries' electrofishing guidelines.[14]
   iii. The capture team must handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.
   iv. Captured fish must be released as near as possible to capture sites.
   v. ESA-listed fish may not be transferred to anyone except NOAA Fisheries personnel, unless otherwise approved in writing by NOAA Fisheries.
   vi. Other Federal, state, and local permits necessary to conduct the capture and release activity must be obtained.
   vii. NOAA Fisheries or its designated representative must be allowed to accompany the capture team during the capture and release activity, and must be allowed to inspect the team's capture and release records and facilities.

l. Earthwork. Earthwork (including drilling, excavation, dredging, filling and compacting) will be completed as quickly as possible.

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[13] For purposes of this Opinion only, "large wood" means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

[14] National Marine Fisheries Service, *Backpack Electrofishing Guidelines* (December 1998) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

i. Site stabilization. All disturbed areas must be stabilized, including obliteration of temporary roads, within 12 hours of any break in work unless construction will resume work within seven days between June 1 and September 30, or within two days between October 1 and May 31.

ii. Source of materials. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained outside the riparian area.

(1) Any erodible elements of this system must be adequately stabilized to prevent erosion.

(2) Surface water from the area must not be diverted from or increased to an existing wetland, stream or near-shore habitat sufficient to cause a significant adverse effect to wetland hydrology, soils or vegetation.

m. Site restoration. All streambanks, soils and vegetation disturbed by the project are cleaned up and restored as follows:

i. Restoration goal. The goal of site restoration is renewal of habitat access, water quality, production of habitat elements (such as large woody debris), channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.

ii. Streambank shaping. Damaged streambanks must be restored to a natural slope, pattern and profile suitable for establishment of permanent woody vegetation.

iii. Revegetation. Areas requiring revegetation must be replanted before the first April 15 following construction with a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees.

iv. Pesticides. No pesticide application is allowed, although mechanical or other methods may be used to control weeds and unwanted vegetation.

v. Fertilizer. No surface application of fertilizer may occur within 50 feet of any stream channel.

vi. Fencing. Fencing must be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

2. To implement reasonable and prudent measure #2 (fish ladder and trap operations), the Corps shall ensure that:

a. Before completing any work below ordinary high water, the City will collaborate with the Corps and NOAA Fisheries to develop an operations and maintenance (O&M) plan for approval by NOAA Fisheries. The O&M plan will include directions for the following actions:

i. Operation of the ladder and trap under the full range of expected flows, including provisions to ensure adequate flow for juvenile fish passage and to otherwise conserve aquatic habitats by limiting diversion to the minimum necessary to meet existing delivery obligations.

ii. Maintenance measures to clear gravel, wood or other debris that may reduce fish passage or otherwise threaten ladder or trap operations.

iii. Hydraulic evaluations as follow to ensure that the ladder and trap, as built, meet fish passage criteria.

(1) An initial evaluation to be completed within 30 days of commencing ladder operations

(2) A final evaluation to be completed within 180 days of commencing ladder operations.

(3) If either evaluation shows a hydraulic deficiency in the ladder or trap, the City will meet with the Corps and NOAA Fisheries within 15 days to develop remedial actions and a schedule for completion.

iv. Regular, scheduled inspections as necessary to ensure that all parts of the ladder and trap continue to operate as intended.

b. If the City fails to submit the O&M plan to the Corps and NOAA Fisheries for approval before beginning work below ordinary high water, or to operate the facility according to provisions of the approved O&M plan, NOAA Fisheries will consider that a modification of the action that causes an effect on listed species not previously considered and causes this incidental take statement to expire.

e. Educational notice: status of ESA species in the North Santiam River and the need for water conservation. Provide written notification to every owner or occupant of property served by the City of Salem's Public Works Department, and from which the City collects any user charge, fee or toll for use of its supply of water, of the following information as part of a special mailing, a feature article in a periodic newsletter, or such other manner that the City deems appropriate.

I. Adult and/or juvenile UWR chinook salmon and UWR steelhead are present in the project area year round.

ii. These species are listed as threatened under the Federal ESA.

iii. Adults and juveniles of these species should be avoided and protected, and require minimum instream flows to successfully complete behaviors such as migration, spawning and rearing that are necessary for their long-term survival and recovery.

iv. The lack of necessary instream flows may result in a variety of adverse biological effects including direct mortality, delayed migration, reduced spawning, loss of preferred food resources for rearing, reduced growth, altered competitive relationships, reduced populations and decreased productivity.

v. Therefore, all users served by the City are encouraged to eliminate waste and be as efficient as possible in their use of water, including their technology or method of diverting, transporting, applying and recovering water; by changing management of water use; and by applying specific conservation measures such as eliminating system leakage, low water use landscaping, metering, and use of high efficiency plumbing fixtures.

f. Educational sign: status of ESA species in the North Santiam River and the need for water conservation. Post the same educational information outlined above on

permanent signs placed and maintained in the vicinity of the ladder, or as near those facilities as is appropriate, to notify members of the City, contractors, or other members of the public who may be in the area.

3. To implement reasonable and prudent measure #3 (monitoring and reporting), the COE will ensure that the applicant completes the following tasks.

   a. Construction monitoring. Ensure that the applicant submits a monitoring report to the COE and to NOAA Fisheries within 120 days of completing work below ordinary high water describing success meeting the construction terms and conditions for the fish screen and tailrace barrier. The construction monitoring report will include the following information:
      i. Project identification
         (1) Permittee name, consultation number, and project name,
         (2) contact person for project construction, and
         (3) starting and ending dates for work completed
      ii. Narrative assessment. A narrative assessment of the project's effects on natural stream function.
      iii. Photo documentation. Photographs of habitat conditions at the project before, during, and after project completion.[15] Include general views and close-ups showing details of the project and project area, including pre and post construction. Label each photo with date, time, project name, photographer's name, and a comment about the subject.
      iv. Work cessation. Dates work cessation was required due to high flows.
      v. Fish screen. Compliance with NOAA Fisheries' fish screen criteria.
      vi. Pollution and erosion control. A summary of pollution and erosion control inspections, including any erosion control failure, hazardous material spill, and correction effort.
      vii. Site preparation. Total cleared area – riparian and upland.
      viii. Isolation of in-water work area, capture and release.
         (1) Supervisory fish biologist – name and address.
         (2) Methods of work area isolation and take minimization.
         (3) Stream conditions before, during and within one week after completion of work area isolation.
         (4) Means of fish capture.
         (5) Number of fish captured by species.
         (6) Location and condition of all fish released.
         (7) Any incidence of observed injury or mortality.
      ix. Site restoration.
         (1) Finished grade slopes and elevations.

[15] Relevant habitat conditions may include characteristics of channels, eroding and stable streambanks in the project area, riparian vegetation, water quality, flows at base, bankfull and over-bankfull stages, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

(2) Log and rock structure elevations, orientation, and anchoring (if any).
(3) Planting composition and density.
(4) A five-year plan to:
(a) Inspect and, if necessary, replace failed plantings to achieve 100% survival at the end of the first year, and 80% survival or 80% coverage after five years (including both plantings and natural recruitment).
(b) Control invasive non-native vegetation.
(c) Protect plantings from wildlife damage and other harm.

b. Annual operations monitoring report. Ensure that the applicant submits an annual operations monitoring report to the COE and to NOAA Fisheries by January 31 of each year until 2009, describing its success meeting the operations terms and conditions for the ladder. The operations monitoring report will include the following information:
i. Flow measurement. Weekly maximum flow levels measured in cubic feet per second, between June 1 and October 31, at each of the following locations:
(1) In the north channel, downstream from Upper Bennett Dam.
(2) Below Lower Bennett Dam.
(3) At the Salem Ditch Headgate.
ii. Hydraulic conditions in the fish ladder.
iii. Site and channel restoration.
iv. A summary of site restoration plant inspections, and replantings and non-native vegetation control efforts (if any).
v. Photographic documentation of environmental conditions at the channel restoration sites.

c. Reporting address. Submit a copy of the construction and annual operating reports to the following address:

Director, Oregon State Habitat Office
Habitat Conservation Division
NOAA Fisheries
Attn: 2002/01195
525 NE Oregon Street
Portland, OR 97232

d. Reinitiation. The COE shall reinitiate formal consultation on this Opinion if the City of Salem increases diversions to the north channel for new or expanded uses, leaving flows in the south channel lower than those for which the ladder is designed. This term and condition is in addition to reinitiation requirements described in section 2.1.6, above.

e. Salvage notice. If a dead, injured, or sick endangered or threatened species specimen is found, initial notification must be made to the NOAA Fisheries Law

Enforcement Office, Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; phone: 360.418.4246, or 800.853.1964. Care will be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

3. MAGNUSON-STEVENS ACT

3.1 Background

The objective of the essential fish habitat (EFH) consultation is to determine whether the proposed actions may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NOAA Fisheries shall provide conservation recommendations for any Federal or state activity that may adversely affect EFH;

- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for Federally-managed fisheries within the waters of Washington, Oregon, and California. Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years) (PFMC 1999).

Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of the potential adverse effects to these species' EFH from the proposed action is based on this information.

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.4 Proposed Action

The proposed action is detailed above in section 1.2. The action area for this consultation begins upstream at the site of Upper Bennett Dam and extends to the confluence of both channels downstream to the extent that dam diversions affect river flow levels. This area has been designated EFH for chinook and coho.

3.5 Effects of Proposed Action

This project will improve passage past the Upper Bennett Dam. As described in section 2.1.3 of this Opinion, the proposed action may result in adverse effects to water quality (sediment), and temporary passage restrictions. NOAA Fisheries believes the implementation of the project is likely to adversely affect EFH for chinook and coho salmon. NOAA Fisheries also believes that providing fish passage and the conservation measures proposed as an integral part of the action would avoid, minimize, or otherwise offset potential adverse impacts to designated EFH.

3.6 Conclusion

Construction of the fish ladder replacement project at Upper Bennett Dam will adversely affect designated EFH for chinook and coho salmon.

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the applicant and by NOAA Fisheries, all of the reasonable and prudent measures and the terms and conditions contained in section 2.2.3 are applicable to chinook and coho salmon EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH recommendations.

3.8 Statutory Response Requirement

Please note that the MSA (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.9 Supplemental Consultation

The COE must reinitiate EFH consultation with NOAA Fisheries if either the action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

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